



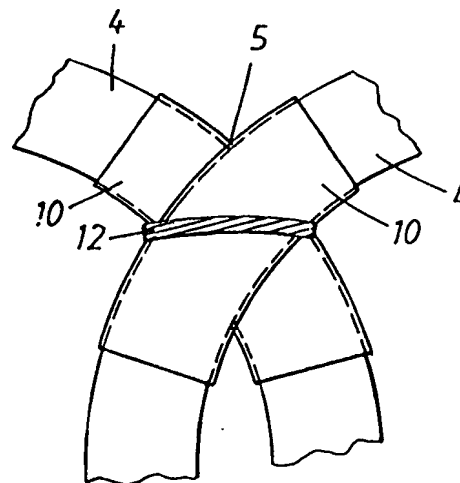
## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(21) International Application Number: PCT/SE97/00899 (22) International Filing Date: 27 May 1997 (27.05.97) (30) Priority Data: 9602079-7      29 May 1996 (29.05.96)      SE 9602096-1      29 May 1996 (29.05.96)      SE (71) Applicant (for all designated States except US): ASEA BROWN BOVERI AB [SE/SE]; S-721 83 Västerås (SE). (72) Inventors; and (75) Inventors/Applicants (for US only): LEIJON, Mats [SE/SE]; Hyvlargatan 5, S-723 35 Västerås (SE). LARSSON, Bertil [SE/SE]; Sammettsvägen 12, S-724 76 Västerås (SE). KALLDIN, Hans-Olof [SE/SE]; Grenadjärgatan 9, S-723 46 Västerås (SE). BERGGREN, Sören [SE/SE]; Vetterstorpsgatan 30, S-724 62 Västerås (SE). (74) Agent: STOLT, Lars, C.; L.A. Groth & Co. KB, P.O. Box 6107, S-102 32 Stockholm (SE).		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, CZ (Utility model), DE, DE (Utility model), DK, DK (Utility model), EE, ES, FI, FI (Utility model), GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).  <b>Published</b> <i>With international search report.</i> <i>Before the expiration of the time limit for amending the</i> <i>claims and to be republished in the event of the receipt of</i> <i>amendments.</i>	

(54) Title: A DEVICE IN THE STATOR OF A ROTATING ELECTRIC MACHINE

## (57) Abstract

A device for avoiding wear between the cables in coil-end packages on the stator (1) in a rotating electric machine comprises a resilient layer (10) in the contact area between two cables (4). The cables (4) are mutually secured by a securing device (12). The resilient layer (10) permits a certain relative movement between the cable (4) due to skewing of the resilient material and not due to sliding in the contact area. The thickness of the resilient layer (10) is chosen taking into consideration the relative movement permissible. The cables comprise at least one current-carrying conductor (6), a first layer (7) having semi-conductive properties provided around said conductor (6), a solid insulating layer (8) provided around said first layer (7), and a second layer (9) having semi-conducting properties provided around said insulating layer (8).



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## INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 97/00899

## A. CLASSIFICATION OF SUBJECT MATTER

IPC6: H02K 3/40, H02K 3/50

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: H02K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5036165 A (R.ELTON ET AL), 30 June 1991 (30.06.91), see the whole document	1,8
Y	--	2-7
Y	US 4367425 A (M.A.MENDELSSON ET AL), 4 January 1983 (04.01.83), column 1, line 7 - line 13, figure 2	2-5
A	EP 0309096 A2 (WESTINGHOUSE ELECTRIC CO.), 29 March 1989 (29.03.89), abstract	2-7
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International application No.

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## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 9406194 A1 (ELIN ENERGIEVERSORGUNG GESELLSCHAFT M.B.H.), 17 March 1994 (17.03.94), abstract --	2-7
A	US 3560777 A (WERNER MOELLER DUBENDORF ET AL), 2 February 1971 (02.02.71), abstract --	2-7
A	US 4588916 A (R.J.LIS), 13 May 1986 (13.05.86), abstract --	2-7
A	US 4618795 A (G.D.COOPER ET AL), 21 October 1986 (21.10.86), abstract -- -----	2-7

# INTERNATIONAL SEARCH REPORT

Information on patent family members

01/10/97

International application No.

PCT/SE 97/00899

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5036165 A	30/06/91	US 5066881 A US 5067046 A CA 1245270 A US 4853565 A	19/11/91 19/11/91 22/11/88 01/08/89
US 4367425 A	04/01/83	BE 893377 A CA 1188842 A JP 1637367 C JP 3002187 B JP 57209907 A	01/12/82 11/06/85 31/01/92 14/01/91 23/12/82
EP 0309096 A2	29/03/89	CA 1283685 A CN 1031629 A JP 1089936 A US 4800314 A	30/04/91 08/03/89 05/04/89 24/01/89
WO 9406194 A1	17/03/94	AT 180892 A AT 399790 B CA 2144046 A CN 1033678 B CN 1085021 A DE 59302528 D EP 0659307 A,B JP 8501437 T	15/11/94 25/07/95 17/03/94 25/12/96 06/04/94 00/00/00 28/06/95 13/02/96
US 3560777 A	02/02/71	CH 479975 A DE 1933221 A FR 2015929 A SE 356179 B	15/10/69 26/02/70 30/04/70 14/05/73
US 4588916 A	13/05/86	CA 1250881 A	07/03/89
US 4618795 A	21/10/86	BE 904580 A CN 1005440 B FR 2587554 A JP 2050405 C JP 7085632 B JP 61244239 A KR 9401362 B	10/10/86 11/10/89 20/03/87 10/05/96 13/09/95 30/10/86 19/02/94